Assessment of dental fear in children and their relationship with dental caries

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Abstract

Background: An effective dental treatment to a child patient requires knowledge to recognize dental fear and its management. Psychometric analysis of the factors that add to fear level of children can be accessed through CFSS-DS.

Objective: To assess dental fear in children and their relationship with dental caries in 7- 9 years and 10-12 years old children.

Method: A sample of 600 children was randomly selected. The dental fear was measured by the use of the psychometric scale Children's Fear Survey Schedule Dental Subscale (CFSS-DS). Caries experience (DMFT/dmft) was performed according to the World Health Organization (WHO) criteria.

Results: Mean CFSS-DS score was 21.98 ± 8.45 and the mean score of DMFT/dmft was 2.26. A statistically significant association between dental fear and dental caries was detected. DMFT/dmft scores were found to be higher among patients with high levels of dental fear than among patients with low levels of dental fear. The most fear provoking stimulus for children were injections (4.383 ± 1.52) followed by noise of the dentist drilling (3.602 ± 1.52) and choking (2.672 ± 0.75) which was not statistically significant difference in fear score between the two age groups.

Conclusion: The present study concluded that CFSS-DS was meaningful in the prediction of dental fear among children and supports the dentist while choosing the method of communication with the children before and during the treatment. Children's dental fear was strongly associated with dental caries and experience of dental treatment.

Key words: CFSS-DS, dental caries, dental fear

Introduction

The public health problem which is significantly prevailed in most countries is the state of dental fear among children. Among common fears, dental fear has been ranked fourth . It is a normal emotional response to one or more specific threatening stimuli in dental situation while dental anxiety refers to a state of apprehension that something awful is going to happen in relation to dental treatment.[1] It has been recognized as a strong negative feelings associated with dental treatment. Dental fear in children has multifactorial etiology.[2] The most common reason for dental fear are negative dental experiences, personality, parental dental fear, age and gender. Moreover, the cultural background of some children, their temperament and subjective experiences such as perceived dentist behavior are also important factors for forming of dental fear. Parenting styles have also given a major impact in the upliftment of children's psychosocial growth and in shaping their behavior. It is important to understand the normal behavioral characteristics of children of different ages to facilitate the diagnosis and the treatment of pediatric patient. Early detection and management of dental fear are the key for success of dental treatment. Dental fear is the key factor that may cause patients to avoid, delay, or even cancel dental appointments. The technique applied or the skills of the pediatric dentist will not only give the success of pediatric dental practice but also on their parents, their attitudes and behavior in the operatory.[3] Positive interactions between children and the dentist is important to improve work efficiency. And also in order to do proper treatment, good communication with children should be established by the dentist. The Children's Fear Survey Schedule Dental Subscale is a well known psychometric scale used for assessing dental fear in children. It has been shown to have good reliability, validity and is being used in several countries and interpreted in different languages.[2] Dental fear in children has been reported as one of the reason which may lead to lack of child cooperation, and therefore poor oral health. Some studies have suggested that a relationship between dental fear and dental caries also exists. If during childhood, successful identification and management of dental anxiety is done then the progression of dental fear into adulthood can be prevented to some extent. So, it is extremely important to evaluate dental fear in children so as to make future plans to reduce the incidence of dental caries. Hence, the present study was carried out with the aim to evaluate dental fear among 7 to 9 years and 10 to 12 years old children and to assess relationship between dental fear and dental caries.

Materials and method

The study protocol was analysed and accepted by the ethical committee. Children for the study were randomly selected from children with good general health, no previous dental experience and children who were accompanied by their parents or guardians. Children with dental emergencies such as trauma, pulpitis, apical periodontitis and dentoalveolar abscess and presence of any systemic diseases and physically disabled children were excluded from the study.

Study design

This sample comprised of six hundred children in the age group of 7-12 years coming for a routine dental check up in the Department of Pediatric and Preventive Dentistry. Children were selected randomly for the study who were cooperative and had good general health. The objective of the study was to assess dental fear in children who were undergoing dental treatment or had already underwent dental treatment. To evaluate dental fear, Children's Fear Survey Schedule Dental Subscale (CFSS-DS) was used and it comprises of fifteen questions which are related to different features of dental treatment and are scored as follows: not afraid=1, little afraid=2 , fairly afraid=3, quite afraid=4, very afraid=5. Total score ranged from 15 to 75. Children with CFSS-DS score above 38 were considered as dental fear. The questionnaire was prepared in both English and Hindi, native language of the children to facilitate better understanding for children.

Dental examination

Clinical examination recorded were dental caries in mixed dentition of 7-12 years old children. DMFT for permanent teeth and dmft for primary teeth were used to measure caries experience. Each child was examined on a dental chair. Single calibrated examiner did all dental examinations. It was performed in an orderly manner and started from the most posterior tooth in maxillary quadrant and later in a clockwise direction.

Statistical analysis

Data were recorded in MS office Excel sheet using patient's age, sex, fear score and DMFT/dmft score respectively. Analysis of variance (ANOVA) had been performed to test the difference in

fear score between the two age groups and DMFT/dmft with level of significance established at p value= 0.067, >0.05.

Results

Table 1, in the age group of 7 to 9 years with 348 children showed the mean score and standard deviation of CFSS-DS was 22.20 ± 7.89, out of which 259 were non-fearful children with mean score and standard deviation was 26.20 ± 5.26, whereas the mean score and standard deviation of moderately fearful(73) and fearful children(16) were 33.38 ± 3.12 and 42.5 ± 2.29 respectively. There was no significant difference between the fear in 7 and 9 years of age group. In the age of 10 and 13 years with 252 children showed the mean score and standard deviation of CFSS-DS was 21.76 ± 8.58, out of which 206 were non-fearful with the mean score and standard deviation was 23.52 ± 5.37, whereas 35 were moderately fearful and 11 were fearful with the mean score and standard deviation of 34.30 ± 2.72, and 44.75 ± 2.63 respectively. There was no significant difference between the fear in 10 and 13 years of age group.

Graph 1, the mean total score of CFSS-DS for the 15 factors was 1.967 ± 0.75 and for the age group of 7-9 years and 10-12 years were 2.091 ± 0.71 and 1.333 ± 0.79 respectively. The mean total score for 15 factors showed that there was no significantly different between the age group of 7-9 years and 10-12 years except for factor 7 (having somebody look at you) which showed the significant difference in the mean score between the two age groups. The most feared items for both the age group were factor 3 (injections) (4.383 ± 1.52) followed by factor 10 (noise of the dentist drilling) (3.602 ± 1.52), factor 12 (choking) (2.672 ± 0.75), factor 9 (sight of dentist drilling) (2.672 ± 0.85), factor 8 (dentist drilling) (2.342 ± 0.78) with the least fearful factor 2 (1.148 ± 0.32) (doctors).

Graph 2, the mean total score of DMFT/dmft for all participants was found out to be 2.26. The mean total score of DMFT/dmft among all the non-fearful participant, moderately fearful participants and fearful participants were 1.29, 2.41 and 3.08 respectively. In the age group of 7-9 years, the mean score of DMFT/dmft was 2.4. The mean score of DMFT/dmft among non fearful, moderately fearful and fearful children were 1.4, 2.91 and 2.9 respectively. In the age group of 10-12 years, the mean score of DMFT/dmft was 2.11 in which 1.18 was non fearful, 1.91 was moderately fearful and 3.26 was fearful children.

Discussion

In children with dental fear and anxiety, more clinical and psychological impacts have been observed. Understanding the patient's perspective is an important first step in developing patient centered treatment plan. In managing the child, determining dental fear and anxiety is an important step.[4] The DMFT/dmft index score depicts the awareness of the children dental health care by parents and oral health care systems quality in a country. In the present study the level of dental fear was evaluated by using Children Fear Survey Schedule- Dental Subscale which is globally used and convenient to use in pediatric patients. It has been widely accepted in children and studied in many countries and showed very high internal reliability and high factorial validity.[5] Usually, in dental clinics, child behavior rating is assessed and evaluated regularly but not the fear level.

In the present study, the mean score of the total population of CFSS-DS was 21.98 ± 8.48. The mean total score of CFSS-DS in the present study was similar to the data of the previous studies done by Wogelius P et al[6] and Rajwar AS et al[7]. The result of the present study was also similar to the study done by Raadal M et al[8]. Similarly, in the studies done by Kingberg G et al[9], Mohebbi SZ et al[10] and El-Housseiny AA et al[11], they also reported that the mean score of CFSS-DS were 23.0 ± 7.7, 21.66 ± 8.33 and 23.00 ± 7.75 which showed nearly similar result as our study. However, in the studies done by Raj S et al[12], Beena JP[13] and Ten Bemge M et al[14], they found the mean score of CFSS-DS were 27.17 ± 5.33, 37.0 ± 8.89 and 27.0 ± 9.7 which showed higher result than our study. This wide range in score of CFSS-DS as observed in various studies which may be due to the cultural differences among the countries and the prevalence of oral and dental care services in a particular country, such as in the developing countries. In such countries, children are taken to dental centre only when aggressive treatments are required rather than being taken to the health centre for prevention.[15]

It was observed that the age group of 7-9 years showed the mean score for CFSS-DS was 22.20 ± 7.89 out of which 26.20 ± 5.26 was non fearful, 33.38 ± 3.12 was moderately fearful and 42.5 ± 2.29 was fearful, and there was no significant difference between the dental fear in 7 - 9 years of age group. In the age group of 10-12 years, the mean score of CFSS-DS was 21.76 ± 8.58 out of which 23.52 ± 5.37 was non fearful, 34.30 ± 2.72 was moderately fearful and 44.75 ± 2.63

was fearful, and no significant difference was there between the dental fear in 10 - 12 years of age group. However in the study done by Raj S et al12, they observed between the age group of 4 to 6 years with 80 children showed the mean and standard deviation of CFSS-DS was 28.78 ± 5.742 out of which 26.20 ± 3.263 was non fearful, 34.38 ± 2.125 was moderately fearful and 44.5 ± 1.291 was fearful. In the age of 7 and 9 years with 280 children showed that mean and standard deviation of CFSS-DS was 27.81 ± 4.783 and out of which 26.12 ± 3.400 was non fearful, 33.94 ± 1.621 was moderate fearful and 41.00 ± 2.449 was fearful, and there was no significant difference between the fear in 7 and 9 years of age group. In the age group of 10 and 14 years with 240 children showed that mean and standard deviation of CFSS-DS was 25.93 ± 5.586, where 24.52 ± 4.344 was non fearful, 34.30 ± 1.728 was moderately fearful and 42.75 ± 2.630 was fearful, and there was no significant difference between the fear in 10 and 14 years of age group.

In the present study, children were most afraid of injections followed by noise of the dentist drilling, choking, sight of dentist drilling and dentist drilling. There was no significantly different between the age groups 7-9 years and 10-12 years respectively. The result of our present study was in accordance with the study conducted by Cademartori MG et al[16] who also reported that children were most afraid of injections, choking, and having to go to the hospital. There was no significantly different between age groups 4-7 years and 8-12 years respectively. The dental treatment of caries, pulpitis, abscess, or extraction usually involved drilling of teeth and dental injections . Many children might experience pain related procedures in hospitals by needle injections, thereby, one had to contemplate negative emotional and psychological implications while performing dental treatment.[17]

In the present study, we observed the mean DMFT/dmft in 7-9 years and 10-12 years of age group was 2.26 in which the mean DMFT/dmft score for non fearful, moderately fearful and fearful were 1.29, 2.41 and 3.08 respectively. In the age group of 7-9 years, the mean DMFT/dmft score was 2.4 out of which 1.4 was non fearful, 2.91 was moderately fearful and 2.9 was fearful. In the age group of 10-12 years, the mean DMFT/dmft score was 2.11 out of which 1.18 was non fearful, 1.91 was moderately fearful and 3.26 was fearful. The present study showed significant correlation between dental fear and DMFT/dmft score. The current study replicated with the study conducted by Oba AA et al3 the mean DMFS-dfs score for non-anxious

children was lower than anxious children. They showed the difference between fear level and DMFS-dfs score was statistically significant. However, in contrast with our study, Beena J.P[13] observed that there was no significant correlation between dental fear and DMFS-defs scores.

It is significant that the dental fear is likely a predictor as well as a risk factor for the incidence of dental caries.[1] In children, there is not much difference between anxious and non-anxious individuals regarding caries experience but their dental health might have deteriorated over time due to their behavior and negative dental health attitudes.[13] Treating the children with less invasive pain could create confidence among themselves which were in turned found to have experienced more checkup visits when visiting a dentist.[17] Childhood fears are usually related with evolving changes in children and the prevailing nature of fear often depends on their age. When the children become older, most of the age evolving features of fear decrease or disappear as the power of the ego and the cognitive ability increases resulting the ability of the child to adapt sufficiently against such fears.[15] Fearful children might not always be incorporative during dental treatment and vice versa. CFSS-DS clearly gives a good indication of a child's likelihood of showing fear behavior while having treatment , situational and temperamental factors such as shyness, aggressiveness or the child's psychological functioning may be determine in the expression of a child's dental fear.[18]

Conclusion

The present study concluded that CFSS-DS was meaningful in the prediction of dental fear among children and aids the dentist for selecting better method of communication with the children before and during the treatment. The study also shows that children's dental fear is strongly associated with dental caries and the experience of dental treatment. In this regard, further studies are in need to access the association between dental fear and dental caries so as to reach a more conclusive evidence.

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Table 1: Mean scores and standard deviation of CFSS-DS for non-fearful, moderatelyfearful and fearful according to age group

Age (in years)	Non-fearful (<32)		Moderately fearful (32-39)		Fearful (>39)		Total	
	n	Mean ± SD	n	Mean ± SD	n	Mean ± SD	n	Mean ± SD
7-9 Years	259	26.20 ± 5.26	73	33.38 ± 3.12	16	42.5 ± 2.29	348	22.20 ± 7.89
10-12 Years	206	23.52 ± 5.37	35	34.30 ± 2.72	11	44.75 ± 2.63	252	21.76 ± 8.58
Total	465	24.86 ± 5.31	108	33.8 ± 2.92	27	43.62 ± 2.46	600	21.98 ± 8.32

P=0.067(>0.05)

Graph 1: Representation of mean scores of factors according to age
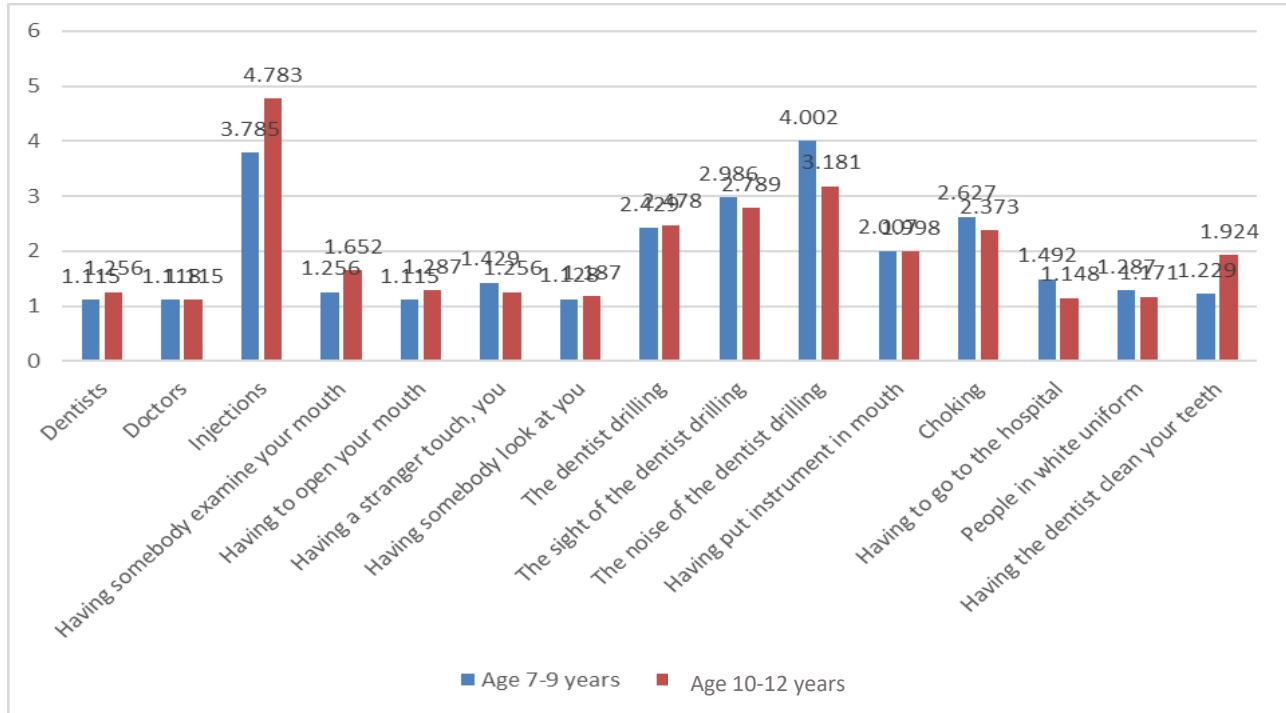
Graph 2 : Representation of Participants with respect to caries